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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,952	08/18/2003	Kazuo Shoji	WAKAB70.003AUS	4157

20995 7590 04/17/2006

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EXAMINER
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KEYS, ROSALYND ANN

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/642,952		SHOJI ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Rosalynd Keys		1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-17, 19, 20, 24-28, 30 and 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-17, 19, 20, 24-28, 30 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 13-17, 19, 20, 24-28, 30 and 31 are pending.  
Claims 13-17, 19, 20, 24-28, 30 and 31 are rejected.  
Claims 1-12, 18, 21-23, 29 and 32-34 are cancelled.

### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on March 31, 2006 has been entered.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:  
  
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 24-28, 30 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 24-28, 30 and 31 include the limitation, "thereby producing dimethyl ether at a conversion ratio of methanol to produce dimethyl ether, which ratio is increased as a

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function of the sodium oxide content and the average pore radius of the activated alumina catalyst". This is considered new matter because the specification only discloses that a conversion ratio is *lower* (emphasis added) at a specified sodium oxide content and average pore radius (see page 10, lines 10-16 of instant specification). There is no disclosure that the conversion ratio of methanol is increased as a function of the sodium oxide content and the average pore radius.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 24-28, 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The instant claims are considered to be indefinite because the phrase "thereby producing dimethyl ether at a conversion ratio of methanol to produce dimethyl ether" is not associated with any numbers, i.e. 2:1; 1:1; etc. Therefore the claims appear to be incomplete. Further the phrase does not make sense.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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9. Claims 13-17, 19, 20, 24-28, 30 and 31 are rejected under 35 U.S.C. 103(a) as obvious over Imata et al. (JP 03-056433, English Translation pages 1-11).

Imata et al. teach production of dimethyl ether by dehydration of methanol in the presence of a  $\gamma$ -alumina catalyst (see pages 2-11 of English translation). The average pore radius ranges from 50 to 100 angstroms, which is equivalent to 5 to 10 nm, with the preferred average pore radius being from 50 to 85 angstroms, which is equivalent to 5 to 8.5 nm (see page 6). The pore volume is taught to be in the range of from -0.60 to 0.90 mL/g (see page 6). The dehydration pressure is disclosed as being from 1-20 kg/sq.cm, preferably 5-15 kg/sq.cm, which is equivalent to 0.098-1.96 MPa, preferably 0.49-1.47 MPa (see page 6). The catalyst is not disclosed as containing sodium oxide.

Imata et al. differ from the instant claims because Imata et al. teach using an average pore radius of from 5-10 nm, whereas the instant claims require the average pore radius to be at least 2.5 nm and less than 5.0 nm.

However, Imata et al. teach that a pore radius of less than 30 nm can be utilized (see page 5). Thus, although Imata et al. expressly disclose the average pore radius to be from 5 to 10 nm, there is a suggestion that this radius can be modified. Particularly since Imata et al. teach that control of the physical properties of the  $\gamma$ -alumina catalyst is directly related to the long-term stability of the catalytic activity (see page 5). One of the physical properties disclosed as being related to the long-term stability and activity of the catalyst is the average pore radius (see page 5). Thus, Imata et al. gives the ordinary skilled artisan motivation to modify the average pore radius. Further, the instant invention is considered to be obvious over the average pore radius of 5-10 nm, preferably 5-8.5 nm, as disclosed by Imata et al. because generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical.

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"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The comparative data presented in the instant invention is not sufficient to avoid this rejection because the comparison is not being made with the closest prior art. For example, none of the comparative data examples given by the Applicants utilize an average pore radius of 5-5.5 nm and a sodium oxide content of zero as disclosed and/or exemplified by Imata et al. Further, the average pore radius is taught by Imata et al. to be a result effective variable. Thus, optimization of this variable is considered as routine experimentation.

#### ***Response to Amendment***

10. The rejection of claims 13-17, 19, 20, 24-28, 30 and 31 under 35 U.S.C. 102(b) as anticipated by Brake (US 4,595,785) is withdrawn, since the claims now require that no active component other than the activated alumina is added to the activated alumina catalyst.

#### ***Response to Arguments***

##### **Imata et al.**

11. Applicant's arguments filed March 31, 2006 have been fully considered but they are not persuasive.

The Applicants argue that the alumina catalyst of Imata et al. naturally contains sodium oxide as impurities and that Imata's silence regarding the sodium oxide content is not sufficient to show that the sodium oxide does not contain sodium oxide. The Examiner disagrees. Imata et al. teach a  $\gamma$ -alumina catalyst. Imata et al. do not disclose that there is any other material in the catalyst other than alumina. It is the Applicants who should show that the catalyst of Imata

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et al. inherently contains sodium oxide, since Imata et al. teach a  $\gamma$ -alumina catalyst and there is no mention of any other components being present. To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). In the instant case there is no teaching in Imata et al. of sodium oxide being present in their  $\gamma$ -alumina catalyst. Thus, the Applicants need to provide evidence that the catalyst of Imata et al. contains sodium oxide. The JP-A-01-160933 reference cited by the Applicants does not make it clear that the catalyst of Imata et al. necessarily contains sodium oxide. In fact, the Examiner has found several references which disclose a  $\gamma$ -alumina catalyst and there is no mention of sodium oxide being present in those catalyst. See for example Brake (US 4,595,785), which discloses a  $\gamma$ -alumina catalyst which contains 0.1-20% by weight of titania and 80-99.9% by weight of  $\gamma$ -alumina, preferably 0.2-10% of titania and 90-99.5% of alumina, even more preferably about 1% of titania to about 99% of alumina. No mention of the presence of sodium oxide is made. Thus, based upon the teaching of Brake, a  $\gamma$ -alumina catalyst does not inherently contain sodium oxide. The JP-A-02-085224 reference cited by the Applicants in their remarks also does not contain any sodium oxide. The Examiner consulted a Japanese Translator here at the USPTO and the translator could not find any where in the reference a disclosure of sodium oxide, in particular the translator did not find the information the Applicants state is disclosed on page 3, lines 23 to page 4, line 4. Further, the only oxides the translator stated were disclosed in the JP-A-02-085224 reference were those elements of group IIIa or Ac-series, which are also disclosed in the English abstract submitted by Applicants on August 18, 2003). The Examiner believes that

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the catalyst of Imata et al. do not teach the presence of sodium oxide. However, Imata et al. do disclose that the porous  $\gamma$ -alumina catalyst pertaining to their invention can be prepared according to the method described in, for example, JP-A-S49-031597 (see lines 2-4 of page 6). The Examiner obtained a copy of this reference and had an oral consultation with a Japanese translator here at the USPTO to discuss the content of the JP-A-S49-031597 reference. The translator disclosed that although the reference does not teach the presence of sodium oxide the reference does disclose on page 522, column 6, lines 1 and 2, that a sodium content of 0.05% is present in their final alumina product. Thus, even if the catalyst of Imata et al. contains some sodium oxide or sodium, as disclosed by JP-A-S49-031597, the amount of 0.05% is within the claimed 0.07% by weight or less.

For the above reasons, the Examiner believes that claims 13-17, 19, 20, 24-28, 30 and 31 are rejectable under 35 U.S.C. 103(a) as obvious over Imata et al. (JP 03-056433, English Translation pages 1-11).

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP-A-S49-031597 teaches production of a porous alumina (see attached Derwent abstract). On page 522, column 6, lines 1 and 2 it is disclosed that the final alumina has a sodium content of 0.05% (information obtained in a oral consultation with a Japanese translator here at the USPTO). An English translated copy of this reference will be provided as soon as a copy is obtained.

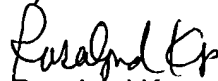


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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M-W & F 4-10pm; H 5:30am-5pm; Sat 8am-1pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Rosalynd Keys  
Primary Examiner  
Art Unit 1621

April 14, 2006